# Industrial FINISHING

Reg. U. S. Pat. Off.

**Devoted to Product Finishing in the Factory**

**Vol. X, No. 7** **MAY, 1934** **$2.00 a Year**


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# THE FURNITURE FINISH OF 1934

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FAST DRYING — DUST FREE 30 MINUTES
FAST RECOATING — 4 HOURS IF NECESSARY
FAST RUBBING — RUB AFTER 16 HOURS DRY

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EVERYWHERE ON EVERYTHING
PAINTS — VARNISHES — LACQUERS — ENAMELS

National Headquarters Cleveland, Ohio

# Letters from Readers of "Industrial Finishing"

**The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor**

## Rustproof Finish

Can you give us names of two or three manufacturers of rustproof metal finish, such as Appolo finish? We have an article made of sheet steel to be treated with rustproof and it must have a smooth, clean finish.—X. Mfg. Co. (Textile Machine Parts).

## Flexible Shaft Polisher

We are interested in locating the manufacturer of flexible-shaft polishing machines, as per illustration taken from INDUSTRIAL FINISHING (page 44, March issue).—I.M.N. Co., (Advertising Specialties).

Editor's Note: The manufacturer's name and address appear in the article beginning at the bottom of page 42 of that same issue.

## Automatic Spraying

Would you kindly put us in touch with makers of automatic spraying machines? At this time, we are interested in processing finishing of automobile interior moulds, if possible, on a conveyor.—S.B.Motor Co. (Motor Vehicles; ENGLAND).

## Crystal Japan Finish

Please furnish me the name of makers of crystal japan finish on metal, as described in your February issue of INDUSTRIAL FINISHING. Any further information that you can furnish will be greatly appreciated.—C.Mfg. Co. (Steel Products).

## Revolving Spray Rack

In one of your back issues you showed a cut of a hardware rack to use in a spray booth. We are in the market for something of the kind and we would like to receive full information in regard to racks of this design.—O.N.Q. Co. (Casket Hardware).

Editor's Note: What is referred to appeared in Sept. 1930 issue, page 56, and was probably a custom-built piece of equipment.

## "Fluid Oil Colors" are not (ordinary) Liquid Oil Colors

Published articles in trade journals during the early part of this year indicate that the intent of the action taken by the American Paint and Varnish Manufacturers' Ass'n, Inc., with reference to filling oil colors in liquid measure cans of one gallon, one quart and ½-pint capacity has been misinterpreted.

This action covered only the adoption of the volume basis for selling oil colors in preference to the old system, which was on a weight basis, and in no way affected the consistency or body in which oil colors were to be sold. The change was adopted on the basis of standardization and simplification of packages. Under the old system it was necessary to stock two dozen or more different size cans and cases to carry same in order to take care of the widely different bulk or volume of 1-lb. of the various colors in the standard lines of oil colors. Even with this large number of cans, 1-lb. of many colors did not completely fill the can, and skinning of contents was often experienced.

# One Coat Finishes for Wood and Metal

*ATTRACTIVE, ELASTIC, TOUGH, WATERPROOF*
*SEND FOR BULLETINS NOS. 8, 8A, 15, 15B.*

## HILO VARNISH CORPORATION

HILO

*"70 Years Experience"*

42 Stewart Ave., Brooklyn, N. Y.

Branches: Boston—Chicago—Philadelphia

Some manufacturers had been selling oil colors in liquid consistency in standard liquid measure cans instead of on a weight basis prior to the adoption of this Simplification Program, and it is believed that this fact has been the confusing factor in this issue. Some colors of this type have been examined and found to be of about the consistency of liquid paint, which apparently have been made by reducing regular paste oil colors with linseed oil or turpentine, or a mixture thereof. Their tinting strength on either a weight or volume basis is, therefore, less than that of paste colors in which a greater percentage of the same quality of color is present. Trade paper articles referred to emphasize objections to this class of product.

Our company was not content with simply changing the packaging of oil colors to conform with the ruling of its Manufacturers' Association, but called on its Research Department to develop a new line of colors which would possess the good features of both the old paste consistency and new liquid consistency products.

The result was "Fluid Oil Colors" (registered with the National, Paint, Varnish and Lacquer Association) . . . not to be confused with liquid oil colors.

By means of a selection and treatment of raw materials it was found possible to produce a line of colors equal in color concentration to the highest quality and strongest line of paste colors, and in some cases to actually bring about an increase in this respect, which are of sufficiently fluid consistency to permit of pouring out of cans. The fluid consistency makes the actual mixing operation much easier. Just pour the well stirred colors into the paint to be tinted and mix thoroughly. . . . . An unfortunate use of the term "Fluid Oil Colors" in articles which really covered liquid consistency oil colors, and an insufficient knowledge of actual facts on the composition of "Fluid Oil Colors" has given [trade paper] readers the impression that they are just another line of liquid colors in oil. This explanation should serve to settle this controversial subject to the satisfaction of all interested parties.—Frederick L. Theurer, Production Manager, Pittsburgh Plate Glass Co., Paint & Varnish Division.

## Polishing Machines

In February issue, you have an article describing the use of polishing machines (pages 13, 14, 15). At the present time, we are using a very heavy type of rubbing machine for flat work but are interested in getting in touch with the manufacturer of the small portable polishing machines for use on case sides and fronts. The one referred to with the sheepskin cover would be of particular interest to us. If you are able to secure for us a catalog of the manufacturer of this article, it would be greatly appreciated.—H. Furn. Co. (Bedroom, Dining Room).

## Paint Can Shaker

We have a request in our Buyers' Service Department for manufacturers of machinery by which paints, in all sized containers, from a gallon down, can be shaken up to insure the proper mixture of the ingredients. What we believe this party has in mind is some kind of a shaking machine that will mix the paint after the cans have been sealed. Any information you might be able to furnish us as to manufacturers of this type of machinery would be appreciated.—R. H. D. Corp. (Directory Publ.)

## Tung Oil Uses

I have been informed that a number of mills throughout the west, manufacturing sash and doors, are now utilizing tung oil as a dip to preserve the wood. I am extremely interested in ascertaining new uses of tung oil and if you have any information on this subject, I would certainly appreciate receiving it. Since the introduction of tung tree planting in the United States, many new uses for the oil have been discovered, and perhaps the use of tung oil dip by millers might prove an important outlet for the oil. Any information that you are in a position to furnish will be very much appreciated by me.—F.F.F. (Chemical Division).

## Bone Ivory on Birch

We are having difficulty in securing a bone ivory or antique ivory finish on birch. We wonder whether you have records in your office of how this finish could be properly obtained and, if so, we should sincerely appreciate any information you could give us in this connection.—T. Mfg. Co. (Furniture).

## "Crystocrac" Lacquer; Steel Sash Putty

I saw several times in your book, advertisments about "crystocrac"

*(Continued on page 50)*

# DeVilbiss Equipment
# Spray-Finishes
# ROYAL Typewriters

**The Royal Typewriter Company appreciates the quality and economy advantages of using DeVilbiss Spray-Finishing Equipment.**
**Leading manufacturers in all industries know that with new and modern spray-finishing equipment, better finishes are produced—and, through faster and more efficient finishing operations, production costs are lowered.**
**You cannot get best results at lowest cost by using old-fashioned finishing methods or out-of-date spray-finishing instruments. For expert advice on modernizing your finishing department, call in your local DeVilbiss representative. Or write us direct.**

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# Enforce These 50 Orders for Safety - - -

## by R. L. Masterson

1—THE FIRST RULE of fire prevention is cleanliness. Observance of other rules may diminish the spreading of fire after it has started and decrease the amount of damage, but cleanliness prevents the origin of many fires. An ounce of prevention is worth a pound of cure.

2—Spray booths, tubes, ducts, stacks, and all spraying apparatus should be kept as free from deposits of residues as practical by cleaning daily or oftener.

3—Scraping of residues from spray booths, floors, and ducts, should be done only with scrapers made of wood, bronze or other non-sparking materials.

4—All equipment, including booths, ducts, etc., should be cleaned thoroughly before making any alteration or repairs.

5—Spray booths used for applying lacquers or pyroxylin finishes should be used for no other purpose without first being thoroughly cleaned. If this precaution is not observed, serious results are probable, for the reason that alternating deposits of lacquer with varnish, oil-base stains, ground coats, etc., may result in spontaneous heating and eventual ignition.

6—Employes should be prohibited from entering stacks or ducts for cleaning or other purposes until the ducts are free of flammable vapors, and have been thoroughly wet down with water.

***- - - And your finishing department will earn a lower insurance rate because many hazards that have caused serious accidents, disastrous fires and financial losses in other plants will be removed from your establishment.***

★ ★ ★ ★ ★

7—Cleaning interiors of spray booths may be aided by covering the walls and roof with a heavy coating of vaseline or cup grease, over which heavy manila wrapping paper is applied, or by the use of liquid soap compounds that dry to a smooth, non-sticky surface—that is, dry and smooth, but readily soluble in water. The collection of spray dust and refuse can be more easily and completely removed without undue scraping.

8—In booths where lacquers, shellacs or other materials which give a dry, dusty residue are sprayed, oily or sticky coatings should be avoided because of the tendency to trap and hold in the booths large quantities of such flammable dust, which otherwise would be removed by the air currents.

9—Blowing down the interior of booths and ducts with compressed air even with the ventilating system kept in operation is not good practice. The use of low pressure

steam for this purpose is more advisable.

10—Where waterproofed, drained floors are provided in spray booths, the most effective cleaning operation is to wash down the surfaces with streams of water.

11—Where materials which produce dust residues are sprayed, the entire finishing department, including floors, walls, ceilings, etc., should receive periodical cleanings—paying particular attention to heating pipes, window ledges, outside roofs of spray booths, lighting and power fixtures, drying ovens, etc.

12—The use of flammable solvents such as naphtha, lacquer reducer, etc., for cleaning spray booths and ducts should be avoided. If naphtha or benzine is diluted with about equal parts of carbon tetrachloride, the danger is greatly reduced. Kerosene, turpentine, or other similar high-flash-point oils should be used only when necessary, and then with the exhaust system running.

13—Scrapings and sweepings should never be left in piles on the floor, but should immediately be placed in covered metal containers—preferably filled with water to wet down the residue—and immediately removed from the building.

14—Residues from the spray booth should never be burned under boilers, as the dry residue of lacquer and similar coatings generate large volumes of flammable and explosive gases upon exposure to heat, and may result in explosions.

15—Fan blades should be of bronze or other non-sparking metals, and so installed that there is no danger of contact between moving parts and the exhaust duct. The fan blades should be removed and cleaned frequently, as large accumulations of residue on them decreases their efficiency and may throw them out of balance so as to produce sparks which create a serious fire hazard.

16—Exhaust pipes should be fitted with clean-out doors at all up-turn elbows and just outside the spray booth, these openings being on the underside of the duct to facilitate cleaning at frequent periods.

17—The minimum quantity of finishing material should be kept near the spray booth. Tightly covered containers should be used.

18—Containers supplying the spray guns should be of closed type or provided with tight-fitting metal covers kept in place.

19—Containers not resting on the floor should be supported on metal brackets or suspended by wire cable or its equivalent [to ground them].

20—Suspended gravity-feed containers should not exceed 10 gallons capacity.

21—Pressure containers should be provided with safety valves or other devices for releasing the pressure. These devices should be set to release at 10-lbs. pressure. They should be kept clean to insure their prompt and effective action.

22—Separate containers, material hose and other equipment should be used for different types of materials, such as shellac, lacquer, varnish, etc. These containers and hose should be cleaned frequently.

23—Lacquer and varnish coatings on the outside of mixers, containers, etc., add to the seriousness of a fire, should one occur, therefore this apparatus should be kept clean.

24—Empty metal shipping drums and other empty containers should have the plugs or caps replaced and promptly removed to the outside of the finishing room.

25—The amount of stock in spraying rooms should be minimized to avoid unnecessary spreading of fire. Care should be taken to promptly remove freshly coated work from the vicinity of spray booths.

26—Under no circumstances should a dust-collecting system be used for ventilating purposes, or vice versa.

27—Sprinkler heads in spray booths, exhaust ducts, and finishing rooms should be kept clean, preferably without the use of paper bags or other coverings. Where paper bags are used they should be changed at least once a week, or as soon as there is any appreciable collection of residue.

28—All electrical devices, such as switches, starters, etc., should be installed away from the spray booth and inspected frequently to insure freedom from sparking.

29—Electric lights should be provided with vapor-proof bulbs, and should never be installed in spray booths, ducts, etc.

30—All moving machinery and belts, as well as the metal of spray booths and ducts should be grounded to eliminate sparks from static electricity.

31—The use of chain hoists having iron chains is not desirable, as these are likely to strike sparks.

32—Hand trucks used on concrete floors should preferably have wheels of non-sparking composition.

33—Avoid dragging metal drums, boxes with nails in them, etc., over concrete floors, as these may cause sparks.

34—Spray operators and other workmen around booths should not be permitted to wear hob-nailed shoes that might cause sparks.

35—Open flames of all kinds, soldering irons, etc., should never be permitted around spray booths until after the booths have been thoroughly cleaned and wet down.

36—The carrying of matches of any type should be prohibited, and frequent match searches should be made.

37—Lacquer-coated clothing worn by workmen exposes them to serious fire dangers. They should be required to change to clean outer clothing frequently.

38—Smoking in finishing rooms should, of course, be prohibited.

39—Dirty, oily waste, rags, refuse, etc., should be promptly placed in covered metal containers, preferably under water, and carried from the building daily.

40—Rags and wiping material should never be spread over radiators, steam pipes, etc., for drying.

41—Sea moss, burlap, rags and other oily materials used for wiping filler or other coatings should not be allowed to accumulate except in closed containers under water, as they may ignite spontaneously and cause a fire.

42—Control valves for sprinkler equipment should be inspected frequently and should be so installed that different sections of the system can be turned off or on quickly from the outside of the building, so as to reduce damage from water in case of a fire.

43—Steam is one of the best extinguishers of lacquer fires; steam pipes in spray booths and exhaust ducts, with quick-acting valves, are desirable.

44—Foam-type extinguishers are very valuable and plenty of them should be available. They should

be inspected frequently to insure their being in working order when they are needed.

45—Buckets of sand or of a mixture of sawdust and soda in the ratio of 10-lbs. of soda to one bushel of clean, dry sawdust, are effective for small fires and should be readily accessible.

46—An auxiliary air strainer should be mounted at each spray booth to thoroughly clean oil and water from the compressed air. The accumulated oil and water should be drained from these traps frequently, and where excelsior or other packing material is used this should be renewed frequently.

47—Interior walls finished in white factory paints will serve to increase the efficiency of illumination and encourage good housekeeping.

48—Avoid steam pipes in spray booths or other locations where accumulations of lacquer spray dust can settle on them.

49—Never pass lacquer, shellac, or other materials containing highly volatile and flammable solvents through electric varnish heaters.

50—Organize, drill and maintain an adequate fire-fighting brigade in which every man is thoroughly familiar with his specific duties in case of a fire. Have frequent and thorough inspections by men in authority to make sure that the above rules are rigidly followed at all times. Better be safe than sorry.

---

## Home Decorator Book

Full color illustrations of several different, completely furnished and attractively decorated home interiors, exteriors of beautiful homes with lawns and shrubbery, furniture and household articles in striking new color schemes, and a section of practical information about paints, brushes, suggested pattern designs, wallboard painting, stucco painting, paint tests—all this and more appear in the new Sherwin-Williams color-covered book of 44 pages, 6x9-in. This book represents the combined edition of the New Home Decorator and Painter Magazine, put out by The Sherwin-Williams Co., Cleveland, Ohio.

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## Non-Shrink Repair Plastic

"Contains an expanding chemical that compensates for evaporation of water, causing materials to lock securely and adhere permanently to any surface." This is a feature of the new patching material, "Stonhard Wallseal," to permanently repair surfaces inside and outside. It comes in powder form and is mixed with water to produce a stiff paste; can be applied with a putty knife or trowel, and will dry in 20 minutes. A trial drum will be sent to responsible companies for making tests. Write Stonhard Co., 401 N. Broad St., Philadelphia, Pa.

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## Spray-and-Finishing-Equipment Industry's Code

W. J. Pitt, secretary of the National Spray Painting and Finishing Association, announces that the Code of Fair Competition for the Spray Painting and Finishing Equipment Industry has been approved by the National Recovery Administration. It went into effect April 30.

The code sets a maximum 44-hour week and 8-hour day for factory employes. Overtime during special periods and with limitations is also specified in the code. Minimum wages for factory employes are set at 40c per hour for men, at 35c per hour for women.

In regard to selling methods, the Code authority is authorized to establish uniform principles of cost accounting subject to approval by the Administration. Likewise, prices, discounts, etc., will be filed with the Code Authority subject to revision on five days notice. Unfair trade practices, such as false advertising, misbranding, commercial bribery, secret rebates, "free deals," sales below cost, etc., are prohibited.

Authority for administering the provisions of the Code is vested in a Code Authority of eight individuals. Six members are to be elected by the National Spray Painting and Finishing Association; two by non-member manufacturers. In addition to the regular board of eight, not more than three additional members may be appointed by the National Recovery Administration.

# Synthetic Enamels as Bake Finishes

## for Finishing Metal Surfaces in One and Two-Coat Applications

by Ray C. Martin

AS IMPORTANT as show or appearance is to the sale of an article, so is the preparation of the surface to be coated. Without the latter, the former can never be achieved. The first operation to consider in properly finishing metal is to clean the surface thoroughly. It must be made free of grease, oil, rust, etc.—and as soon thereafter as possible, a coating of finish should be applied.

### Baking Ovens

Ovens are available in various types and sizes, and they may be arranged to be heated with gas, steam, electricity or oil. Indirect gas-fired ovens have given exacting results for synthetic enamel bakes. These ovens are usually fitted with automatic temperature-control devices which insure a constant temperature, and as an indication toward fuel economy they are fitted with a heat-recovery device whereby semi-spent heat is reverted back into the oven and utilized.

### Application

Enamels made from synthetic resinous compounds require a finishing technique adapted particularly to their own characteristics. Their added covering capacity opens the possibility of a one-coat finish, and great care should be exercised in its application to secure satisfactory results. Thin uniform coats can be applied in a way that gives solid coverage. This is best secured by first "fogging" or "misting" a thin coat over the entire surface, after which this preliminary coat is permitted to "set." The time element is about five minutes. Following the setting of this fogged coat, the surface is then covered solidly with a full strength application of the finish.

***The expression "Synthetic," although well known at this time is often confusing. Synthetic resins are chemical compounds of great complexity and are presented as an attempt to reproduce synthetically a product of nature in the form of a material comparable to vegetable drying oils combined with fossil gum or resin. These combined drying oils and resins have permitted the development of coating films of durable nature.***

A special type of thinner is required for synthetic enamels—and be sure to follow the manufacturer's recommendations for using it. Synthetic enamels require 60 to 75-lbs. of air pressure at the gun, and the nozzle of the gun should be held about 12 to 18-in. from the work. It is important that the spray gun be cleaned thoroughly after usage.

### Baking

Immediately after the cover coat of enamel has been applied, the coated article is placed in the baking chamber. This operation is very important since it is a fact that heat applications render the finish infusible and insoluble. It is heat that converts the basic resin into its insoluble and infusible form. The higher the temperature bake, the greater the resistance will be. Temperature bakes of 250° to 350°F., for periods ranging from 45 minutes to 1½ hours, are generally recommended.

### Two-Coat, One-Bake Finish

In some instances a primer coat may be applied and allowed to set; then in this stage, an enamel coat is applied, and then both coats are subjected to baking . . . a one-operation finish, making for an economical baking schedule following a two-coat application. Where finishing materials of the baking type are employed in industry, the use of "synthetics" offers interesting possibilities.

## Cause of Pinholing

ON ONE OCCASION I was called to a factory to find out why pinholes were appearing on finished bedroom suites. The varnish was being blamed for the trouble. A little investigation soon enabled me to prove that in this case the varnish was not the fault. It was the spray man and the spray gun. The spray gun needed a real cleaning, as it was not properly atomizing the material, and the spray man was holding it too far away from the work while spraying. When these two things (errors) were corrected, the pinholing trouble disappeared.—JOSEPH M. VERDEROSA.

## Paul Sommer Becomes I. S. M. of Standard Varnish Works

The Standard Varnish Works of New York (386 Fourth Ave., N.Y.C.) announces the appointment of Paul Sommer to the position of Industrial

Paul Sommer who becomes Industrial Sales Manager for the Standard Varnish Works of N. Y.

Sales Manager. Mr. Sommer will also serve as technical consultant in its laboratories and factories. Mr. Sommer brings with him a creditable record of over 20 years in the manufacturing and sale of industrial materials. He left his position as Chemical Director and Industrial Sales Manager of the National Varnish Co. of Long Island City in 1928 to organize the North Bergen Varnish Corporation of North Bergen, N.J., for which company he established an enviable reputation. He resigned from the Presidency and sold his interest in this company last January.

The association of Mr. Sommer with the Standard organization is just another step in its policy of building up a high class technical sales organization equipped in every way to meet the most exacting requirements of the new deal in business conditions, and to assist its customers in the development of modern and economical finishing products.

# FRESH SHELLAC

## DRIES QUICKER

EVERY barrel of Du-Pros Strictly Pure Shellac is freshly made when shipped. But freshness is only one of the reasons why Du-Pros gives superior results.

Du-Pros is made only from pure shellac gum and government formula alcohol. These high grade ingredients are put through a double manufacturing operation which cuts the gum into the finest solution. All traces of foreign matter are removed.

As a result, Du-Pros is known as the pure shellac that always flows out well, dries dependably, and sands smooth with a few crisp strokes.

Every good finish deserves at least one coat of Du-Pros Strictly Pure Shellac.

**JAMES B. DAY & CO.**
1872 CLYBOURN AVE.
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**DU-PROS**

**IS FRESH SHELLAC**

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One of the new, all-metal, low-wing, twin-engined Boeing transport 'planes. Top speed, more than 3 miles a minute and cruising speed 171 miles an hour, with 10 passengers, a crew of 3, and baggage and cargo.

# « Aircraft Finishing— III »

## by M. W. Mason

***In this article the author takes up the color coating, wet sanding and wash coating of fabric surfaces, and follows with a more detailed discussion about the cleaning and finishing of exposed metal parts—concluding with notes on lettering and decorating.***

✪ ✪ ✪

COLOR COATS impart protection to the clear, as mentioned previously. Strong sunlight would soon cause the clear dope system to check and crack, rendering it useless. The pigments or coloring matter in the pigmented dopes prevent this by forming a film which is opaque to a certain extent, depending on the color and the quality of the material.

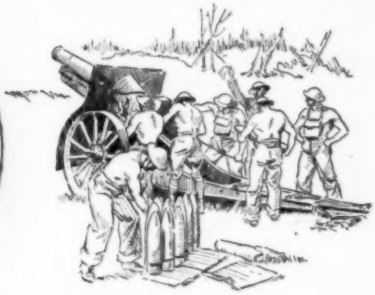
### Spray on Colored Dope

Most of the colored dope is applied with a spray gun after suitable reduction with recommended thinner. Sufficient material is applied to give complete hiding; two or three coats are usually sufficient. This, of course, depends upon how much sanding and polishing is to be done. It should be remembered that excessive use of pigmented dope will cause early checking failure—just as insufficient colored dope will produce the same effect should improper coverage be obtained.

At least one hour's time for drying should be allowed between coats. The final pigmented coat should have a minimum of 48 hours before final water sanding. A medium fine abrasive paper (No. 320), followed by fine paper (No. 400), is recommended. Again, sand-scratching and paper pickup must be avoided. Of course, a waterproof paper is always recommended.

After the surface has been sanded, it should be thoroughly washed with water and allowed to dry. (Protection around openings for lights, wiring, hinges, etc., to prevent wash or sanding water

# *In* ALCOHOL...*as in ammunition*



## ...it's UNIFORMITY that counts!

Illustration—Caution test for odors. Testing aids Rossville in maintaining "control," preventing foreign odors and ensuring uniformity.

ROSSVILLE
THE SPIRIT OF THE NATION
ALCOHOL

BRANCH OFFICES:

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| BOSTON | NEWARK |
| BUFFALO | NEW YORK |
| CHICAGO | PHILADELPHIA |
| CINCINNATI | PITTSBURGH |
| CLEVELAND | SAINT LOUIS |
| DETROIT | SAINT PAUL |
| GRAND RAPIDS | |

NRA

IN war the movement and safety of troops depends upon the accuracy of the artillery. Uniformity in ammunition is essential. The "one pounders" are inspected as carefully as the 155 mm. shells. A projectile only one-thousandth of an inch off-balance might land on friendly forces.

The demand of modern industry for uniformity in alcohols is equally exacting. Economical grades may be used for many commercial processes while especially fine varieties are needed for medicinal, scientific and certain industrial purposes. But all varieties of alcohol must be unvarying in quality if they are to give uniform results.

An explorer in the Antarctic, a surgeon in Baltimore and a motor car manufacturer in Detroit—all rely on Rossville alcohol. Its acceptance by the most exacting buyers is evidence of its high uniformity—displayed in unvarying results.

**ROSSVILLE COMMERCIAL ALCOHOL CORPORATION**
DISTILLERS OF FINE ALCOHOL
TERRE HAUTE INDIANA
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from getting in at the back of the fabric, has already been provided for by skillful taping after the second coat of clear dope was applied.)

### Using a Wash Coat

Where a high polish is desired, the surface is sometimes given a wash coat and polished. Otherwise it is just polished with some suitable wax abrasive polish. The wash coat usually consists of the same pigmented dope, reduced slightly with thinner. This has the property of healing any sand scratches that may have been made during the sanding operation. Besides improving the flow and leveling the system, it colors off any bare spots caused by excessive sanding. The wash coat should be air dried some 24 hours before following with abrasive polishing.

In using a wash coat, it is important to avoid wetting the film too much. This coat should not soften up the previous color coats. Failure to observe this point will result in exposing the fabric weave and partly destroying the "build" obtained by the doping operation. This would be due to the softening action of the thinner on the film, the flow of the softened wet film causing it to appear to sink further into the fabric pores.

The composition of some aircraft finishes will not permit the use of a wash coat. It is therefore suggested that aircraft finishers intending to use wash coats should consult their supplier for further information in this regard.

### Metal Parts Protection

Metal surfaces such as fuselage frame work, landing gear, cowling, etc., must be finished with materials that offer resistance to the various forms of corrosion, while at the same time adding to the beauty of the ship. No end of damage may result if corrosion is permitted to set in.

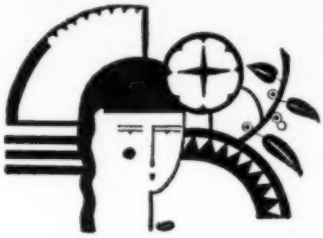
In all cases, the metal should have all grease and foreign matter removed either with a chemical cleaner or special grease removing solvent. Steel structural parts are sometimes given either the Bonderized or Parkerized treatment. This, in general, consists in dipping the steel in a special chemical solution which deposits a water-insoluble salt as a protective film. Either the Bonderized or Parkerized system will require a protective coating of primer and paint or lacquer over it.

Another method for increasing the corrosion resistance of metal surfaces is to plate them with cadmium. Duraluminum is often anodically treated.

### Primer, Surfacer, Putty Glaze

The cleaned metal, when not chemically or electrically treated, should be sanded down to clean it, smooth it and condition it properly for the primer. The primer, whether oil-base or pyroxylin, should be put on only in a thin coat. The primer is smoothed slightly with fine sandpaper when dry, and one or two coats of surfacer are sprayed on.

Dents, file marks, etc., are putty-glazed. The entire system, upon drying, is wet-sanded—either with water or naphtha. Excessive use of surfacer should be avoided. It is far better to insist upon smoother metal to work with. In case dents and scratches do appear, putty-glazing is a much better practice than piling on additional surfacer. Care should be



# MODERN . . .

The present vogue for the modern styling of products makes ornamentation and finish more important factors than ever before.

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exercised to avoid handling the unprimed metal surface, as any finger marks are very apt to show up through the following finishing coats, perhaps actually causing a finish failure. The surfacer coat, having been sanded down to a smooth surface, is then ready for coloring.

### Use Automotive Enamel

An automotive-quality enamel or lacquer may be used for this work. However, where the color is to be the same as the fabric sections, it is advisable to use the colored dope. This eliminates any possibility of color variation or later nonuniform color change on exposure.

Two or three coats of color are sprayed on and allowed to dry thoroughly. This is followed with a water-sanding operation. The sanding should be topped off with No. 400 wet-or-dry paper. Care should be exercised to prevent "picking up" and sand scratching. A high polish is obtained by a wax abrasive polishing operation. Scraps of plush upholstery make excellent polishing rags for this work.

### Lettering; Decorating

All stenciling, such as license number, advertising, etc., should be done before the wax abrasive polishing operation. Neither oil-base nor pyroxylin-base materials have much adhesion over waxed surfaces. Where lettering is to be made with colored dope, etc., a stencil is usually laid out with masking tape, so the color can be applied with a spray gun. In other cases the lettering is applied by brush.

Pyroxylin-base lettering should only be used where permanent lettering is required. Temporary signs or markings are usually made with a japan-base paint, as it is more easily removed without injuring the fabric finish. After the lettering has dried down thoroughly, a light polishing with abrasive compound will remove any overspray that may be present.

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*Part IV of this article, which will appear next month or later, reveals practical information about the patching and repair-finishing of damaged points in areas on the fabric surfaces—and ends with some valuable notes for the modern aircraft finisher.*

---

## Shellac Information

Two 16-page booklets (page size 8¼x10¾ and 3¼x5½-in.) and a 4-page folder—all about shellac—come from Woodfinishing Products Co., 34-48 Industrial St., (Bronx) New York, N.Y. Where, how and why natural shellac is formed, gathered and processed, the importance of shellac containers, how to use shellac, French polishing, the varying price of shellac, and 21 of the mistakes frequently made in using shellac—these are only a few highlights of the contents, which many finish users will want to have available for ready reference.

---

## Roxalin's Tenth Anniversary; Move to New Plant

The new plant of the Roxalin Flexible Lacquer Co. is located at 800-814 Magnolia Ave., Elizabeth, N.J. It is but a short 30-minute drive from New York City via the famous express highway Route 25. The plant is situated just two blocks from this main stem and is readily accessible from all points.

Occupying a sizable piece of ground with railroad siding and provisions for increased tankage, the new home of Roxalin Flexible Lacquer Co., Inc., will have the best to offer in real production and service facilities.

Roxalin's manufacturing has been stepped up considerably by the installation of much new and modernized equipment. The entire plant layout affords an opportunity for real expansion. The laboratories, long the heart of the Roxalin business, benefit particularly from the more spacious quarters the new plant provides.

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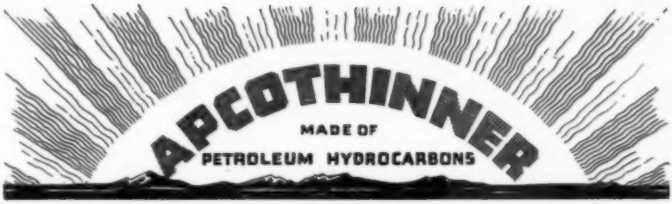


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## Actual Facts in a real Analysis of one Firm's

# Material Cost

***Why a certain heavy-bodied finishing material @ $1.55 and thinned 7/3, really cost more than material @ $1.65 which wasn't thinned at all. —From Experiences I had while working as a Consultant . . . .***

## by Joseph M. Verderosa

RECENTLY a factory owner showed me what a nice heavy-bodied material he was buying "for less money"—one which could be thinned in the ratio of seven parts of material to three parts of thinner. The material he used previously required no thinner; it was used just as it came in its container. To his surprise he had to use more of the heavy-bodied stuff to get the same results.

Well, the heavy-bodied material was costing Mr. Factory Man more than the light-viscosity material for the following reasons:

Every liquid finishing material has a certain amount or percentage of solids and a certain amount or percentage of volatiles. The solids are that part of the material which remains on the surface of the finished article after the finish has dried. The volatiles are that part of the material which evaporates.

The fact that liquid materials are light-bodied or heavy-bodied does not always indicate their relative percentage of solid content. A heavy-bodied or high viscosity material may have less solids than a light-bodied or low-viscosity material.

To explain what solids are I will try to make it clearer in the following example:

Suppose we take a certain amount of dry rosin or a dry varnish gum and (if this were possible) slice it into sheets about the thickness of cigarette paper and then spread a single layer of the film over 10-sq.ft. of surface. Now suppose we dissolve this rosin or gum in one pint of thinner and spray it over 10-sq.ft. of surface. We still have the same thickness of solid film as we had before. But, if we dissolved the same quantity of rosin or gum into two pints of thinner, to make double the quantity of finishing liquid, and then sprayed it evenly over twice as many square feet of surface (20-sq.ft.) we would have a film only half as thick.

Another point to be brought out here is the fact that some solvents or volatiles will cut the gum or rosin more readily and to a lower viscosity than others. In other words a material may, with the same quantity of a proper solvent, be made thinner in viscosity.

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Now I will explain why the cheaper material of heavier viscosity actually cost Mr. Factory Man more money per unit of surface finished. The light-bodied or low-viscosity material had a total of 37% solids, and it cost $1.65* per gallon. The heavier-bodied or high-viscosity material had a total solid content of 30%, and it cost $1.55 per gallon. The thinner used cost $1.00 per gallon. Ten gallons of the 37% material cost $16.50. Ten gallons of the 30% material, thinned 7/3, cost $13.85, as shown by the following figures:

| | |
|---|---|
| 7 gal. material | $ 10.85 |
| 3 gal. thinner | 3.00 |
| 10 gal. mixed | $ 13.85 |

But the 30% mixture was cut 9% more by adding the three parts of thinner, leaving the total solid content only 21%. As a result, if one coat of the 37% solids left a film of say .037-in. thick, then the material with only 21% solid content would leave a film .021-in. thick, or a film just a trifle over one half the thickness of the previous material used—that is using the same quantity of liquid over the same size area of surface. Therefore the cost of the finish coating (of a specified thickness when dry) that this manufacturer was getting with the cheap heavy-bodied material was nearly 1½ times as much as what he had been paying for when he used the more expensive lighter-bodied finishing material. It's something to take into consideration when figuring actual production costs.

---

EDITOR'S NOTE: This is a point well emphasized, but it enlists your interest in just one factor—the cost per square foot of coverage to get a specified thickness of coating. Obviously, in the case cited, the lower priced material costs more to produce the same coverage results as the lighter-bodied finishing material. But there are other factors that interest the user too—the appearance, durability and suitability of the finish for the service expected or demanded of it. What kind and quality of solids it contains counts for something. Sometimes a user of finishing material must be deceived a little on price in order to induce him to buy what, in the final analysis, is really a quality product for the finishing job he has to do.

---

*The prices mentioned here are for illustration purposes only.

## Rough Pattern in Colors

Brown, tan, green, orchid and maroon are some of the standard colors on the Hilo Varnish Corporation's color card bulletin 15B, which illustrates the colors and patterns of No. 150 Shrivel "obtained by placing the coated parts in an oven heated to 150°F. and baking at that temperature for four hours." It's a varnish type bake finish which reminds you of a wrinkle finish . . . covers solid in one coat with brush or spray; reduces with naphtha. Address, Hilo Varnish Corp., 42-60 Stewart Ave., Brooklyn, N.Y.

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## Decorative Bright Metals for Displays

Apollo ChromFlex mounted on Haskelite plywood will be used to embellish the interiors of the Ford Building at the World's Fair this year, and Apollo ChromCopper on Haskelite panels will be used on the exterior of the same building. ChromFlex is a thin decorative sheet metal (the color and smoothness of chromium plating) offered in bright smooth finish or satin finish . . . in large sheets that are smooth or fluted—or crimped to make striking patterns such as narrow parallel stripes or squares (made by crossing the stripes). The metal is also used to cover mouldings.

These decorative metals and others (brass, copper, zinc, nickel, tin) are products of the Apollo Metal Works (pre-finished metals in sheets, strips, coils), LaSalle, Ill.

# Dip Finishing into a tank of Water-Floated Colors

## by Ralph H. Hoke

***Produces striking variegated colors which can be formed into attractive irregular patterns by a skillful operator. The general effect as to pattern and distribution of color can be only partially controlled by the operator, therefore no two patterns will be exactly alike.***

■ ■ ■ ■ ■

IN THE LAST few years waterfloat finishes have achieved considerable popularity. When properly applied, the variegated color effect is strikingly beautiful. The chances are it would be far more widely used if the materials and methods of application were better understood. Probably there have been countless attempts to achieve this attractive finish but with results so unsatisfactory that the effort was abandoned.

The first requirement for success in waterfloat finishing is suitable materials. I have never seen anyone achieve satisfactory results by floating ordinary lacquer enamels or the new so-called synthetic lacquers. It has been my experience that, if thick enough, some of these finishing materials will form into a round ball and drop to the bottom like a chunk of lead. If ordinary lacquer is thinned enough to float successfully, then the article dipped into it will probably not pick up enough color to produce a pronounced pattern, and the colors will have a "washed-out," depressing appearance.

There are so many manufacturers of lacquers that I hesitate to surmise how many of them produce materials ideal for waterfloating. After several years of experience, all I can say is that special materials are superimportant; the technique of application is of secondary consideration.

### The Colors and Thinners

Assume that your lacquer company can supply you with ideal waterfloat materials. Start out with ½ pint each of black, bright red, light green, light yellow, deep orange, purple, light blue, and ½ gallon of special thinner. These seven colors and the thinner furnish sufficient variety and ample quantities for experiments. The special thinner is important, as regular lacquer thinners will spoil the special floatation colors with which I am familiar.

Each color seems to require it's own ratio of thinning. The amount is somewhat dependent on: 1) shape of object to be dipped, 2) which color is to predominate, 3) the temperature of the room, 4) state of the weather. A good plan is to get about six or seven

small cheap syrup pitchers; try a tablespoonful of each color, with an equal quantity of thinner, in each pitcher. Later you probably will discover that the darker the color, the more thinner you need. Now you have several small pitchers, each containing a small quantity of color ready for a test. Check everything carefully.

### Equipment Needed

The next thing needed is a regular dipping tank filled with cold water from the faucet. You will also need a scraper, a screen, a stirring stick and a dipping board. The scraper can be a piece of stiff carton cardboard about 5-in. wide and 6 to 10-in. long, or as long as ¾ the width of the tank. The screen will be a piece of household screen wire of about the same dimensions as the scraper, or nearly as wide as the tank. The scraper is merely to hold in the hand and scrape the skin of paint off the water's surface.

Obviously the screen wire will let the water flow through like a sieve. We use the piece of screen wire to dip underneath the skin of paint. When you come up the water escapes but the small patches of paint, which would cause a blob on the handles to be finished, are caught up by the screen wire.

In my case I think of a dipping board as a flat piece of poplar board surfaced on four sides to approximately ⅞ x 5¾ x 11-in. Small holes are drilled into one side and jill pins are driven in; these sharp-pointed pins stick up about 2-in. The wood handles to be dipped are firmly pressed or driven onto these metal points. The number of jill pins to a board will depend upon the size of the pieces to be dipped; for example, wide paint-brush handles will naturally take up more space than small screwdriver handles.

### A Base Coat First

To obtain pronounced patterns, all handles should first be given a base coat by dipping them in a flat solid color. I prefer white, as the colors and variegated figures show up clearly on a white background; or, light-tint base-coat colors can be used—such as yellow, light blue, pink, meadow green, etc. Waterfloating on a dark undercoat is never satisfactory.

You are now ready for your experiment—or work. Pour out a few drops of each color (as many as you want to use) one after the other onto the water in the center of the tank. Work rapidly, but don't pour too much, as a few drops go a long way. If you desire any particular color to predominate, naturally more of it should be used. Also, I might mention here that the last colors poured will show up most prominently. Now be quick to take your stirring stick (a pencil or the small end of a teaspoon) and gently stir the colors around so they spread through each other. They should extend all over the water's surface. The colors are opaque and they will spread out like a flash as soon as they strike the water, so you can't altogether judge from the surface appearance what will be your result—not until you have had some experience.

### The Dipping Operation

Take a loaded dipping board in hand and, with the handles pointing down thrust the articles to be dipped straight down into the tank—not too quickly. As you push them down wiggle the board as though you had the palsy, or were very nervous. Don't change

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the board's position, but withdraw it in the same location and with the same wiggly motion—only not so pronounced.

The handles or other articles to be dipped should not be positioned too closely together on the dipping board. Allow ample space for the waterfloat film to rush in around each dipped piece. I say this because the colors do form a thin film. As the handles are immersed, the paint film is pushed down and then it draws in from the surrounding surface. This fact explains why the articles on the inside of a dipping board (containing multiple rows of pins) never acquire quite as much of a pattern or of color as those on the outside. If a consistent amount of color is essential, it is well to put handles only on the pins around the edges of the board, leaving the middle vacant. After a few tests the operator can determine the proper number of his particular parts to put on the dipping board for best results.

When you have dipped your first board and withdrawn it you may be disappointed with the finished articles. Shake the board violently so that all possible water will fall into the tank, and then somewhere above an inclined drain board suspend the dipping board in a level position with the dipped handles pointing down.

### Drawing Off Used Colors

Perhaps a minute has elapsed since you poured the drops of color from the pitchers onto the water, stirred the colors and dipped the board. In that short time the scum has turned into a sheet of flexible "ice." Your next step is to pour a few drops of each color onto this "ice," near the center. Now take your stirring stick and, from the farthest corner, gather with a winding motion all of the scum. This will leave the new drops of color floating in the center. Stir these colors quickly over the surface and dip your second loaded dipping board. It should have a better pattern—and as you acquire the swing of the thing, and as you get your timing perfected, your results will improve still more.

A variation of this method is to pick up the piece of wire cloth and scrape the film entirely off immediately after you have dipped a loaded board. With the water's surface clean, add your drops of color, stir and dip again as usual. Occasionally, take the cardboard and scrape the water's surface clean.

However, by applying the new color onto the "ice" before it is removed, the new application of color does not spread until you have wound up the old scum on your stick. The newly poured paint stays fresh, does not coagulate, spreads well, mixes nicely, and the pattern is better in proportion. There is another reason why this method is preferable. It overcomes somewhat the bane of waterfloating finishes—water bubbles.

### Water Bubble Trouble

It really is exasperating the trouble one sometimes has with water bubbles. On certain days in bad weather, or when excessive humidity prevails, the little globules of moisture do persist in hanging onto the sides of the articles dipped. Later, as the surface finish dries, the bubbles burst and cause pinhole craters. You can't escape a certain amount of these rough spots, but if your technique and timing are correct, you can reduce this trouble to a minimum.

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If your colors do not ice up, or form a skin promptly, open a nearby window. The fresh draft of air will help to cause this necessary condition. Sometimes it is an advantage to add common salt to the water to raise its specific gravity. Occasionally conditions are such that the addition of warm water helps. The weather conditions, the size and shape of the objects being dipped—all have an influence.

The work is really not as difficult as it sounds. I feel certain anyone who will persist can easily work out a satisfactory finish. While it is again in my mind, let me repeat: You should experiment with the thinning of the colors until they spread quickly, but still furnish you the desired distinctive, contrasting pattern.

### Adding a Luster Finish

Assume you now have a rack of goods with a base coat of white and a satisfactory waterfloat effect applied. It is needless to tell you the articles must dry perfectly free from the dampness incidental to their bath in water. Your next problem is to apply a luster finish, which will enhance and not destroy the pattern. If you redip in ordinary clear dipping lacquer, it is very apt to cut the special water-dip colors. If they run, the result will be anything but desirable.

The objective can be accomplished in several ways. One plan is to dip the articles in clear pure white shellac, which forms a thin film over the waterfloat colors. When the shellac sets but is not "hard dry;" dip in clear lacquer, which will not attack the colors through the protecting coat of shellac. Some of the handles may have water blisters. If you permit the shellac to dry hard, each bubble will show up unsightly to the eye and rough to the fingers. By dipping in lacquer before the shellac is "hard dry," the lacquer solvents will affect everything enough to smooth out these imperfections.

Another and perhaps a more preferable way is to obtain one of the new synthetic lacquers. It is of the same family as the "waterfloats" but a distant relative; therefore, the clear cuts the waterfloat a trifle—enough to smooth the flaws and slightly change the pattern, but not enough to spoil the decorative effect. The synthetic material I have in mind also has more body and covering capacity. It drys almost as quickly, and is a trifle more free from blushing propensities. It produces a harder, more durable finish with a higher luster. I suggest you make tests of the synthetic as a covering for the waterfloats.

Your commodities or your working conditions may present problems with which I am not familiar. I have merely tried to state in detail the necessary materials and various procedures. If you will carefully follow them, I am sure you can quickly develop an attractive waterfloat finish.

EDITOR'S NOTE: Some firms supply enamel colors which can be floated on water as described here in the waterfloat finishing process, and which give a luster finish. thereby eliminating the need of a follow-up coat of clear finish to produce a luster.

Often the procedure followed in waterfloat finishing is to dip articles singly (vases for example) or suspend them end to end (for dipping in a dip tank) so they can be given a twisting motion or spiral travel as they go down, to produce a spiral, multi-color pattern which is very striking and attractive in appearance.

# *Something Useful for - - -*
# Repairing Lacquer Finishes

ETHYL ACETATE is playing a very important part in the refinishing and repairing of sealer and lacquer finishes. Speaking of repairing, finishing departments in the past had more than enough in the repairing of the slow-drying varnish finish, and no one wishes to go back.

There are a great many things in the process of finishing today that cause a certain amount of repairing, no matter how efficient the department or how foolproof the material being used. There are the reactions of wood that break the lacquer film, leaving white chalk-colored lines where the wood has expanded or contracted. The bridging of sealer is another trouble which shows up in the same manner and is often hard to repair.

Trapped air, sometimes called pinholing, is often difficult to repair without the use of ethyl acetate. Pinholes can be detected by looking very carefully across the surface of a finished cabinet, and they are easily repaired before rubbing. After rubbing the surface these pinholes or little pockets become filled with pumice stone and show up very conspicuously on mahogany or any dark-colored finish.

Skillful use of ethyl acetate offers a quick and inexpensive way to repair these affected parts, and saves the finisher from sanding through the stain, which often

***"I have been employed in the finishing department of a large eastern desk factory for the past ten years. I am submitting this short article, which I hope will be of interest and value to some readers of* INDUSTRIAL FINISHING."—**

**by Thos. Shearer**

results in a bad-looking patched-up job. Ethyl acetate, applied to these defective surfaces, will dissolve the broken lacquer and put it back into solution. Then the surface can be built up with sealer and given a final coat of lacquer. A small brush can be employed in applying the ethyl acetate and lacquer. In this way the parts can be repaired, and this will save recoating of the whole panel, top or front.

In the case of pinholing, apply ethyl acetate with a brush. This will soften the lacquer and the brushing while it is still soft will usually close up the pinholes, making the surface ready for a light finish coat. Of course, this work must be done carefully and skillfully.

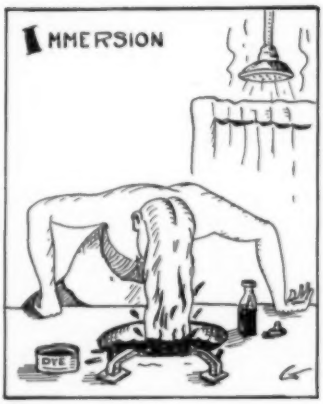
In the refinishing of old lacquered pieces that have become smoky looking and where the lacquer has lost its luster—these surfaces can be brought back to life by spraying on a few coats of ethyl acetate, sanding well and then giving the surface a final coat of lacquer. Ordinarily it would be necessary to clean off

the old finish, which would require much labor and added expense.

Then sometimes new furniture finished in lacquer is often damaged in shipping or after reaching the stores; it requires some quick and skillful work before the article can be sold. Ethyl acetate makes it possible to repair these damaged places quickly; also it enables the finisher to do a good job. That is why I say that ethyl acetate has been very important in the repairing of lacquer finishes—and it will be a great benefit to anyone employed in this work—if used properly.

## Non-Shrink Crack Filler

EVERYONE IS free to cast a vote in his own mind as to what is the greatest possible nuisance. I have felt that possibly one which would give all others a pretty tight race would be a crack filler that either refuses to remain where it is put, or which shrinks and thus leaves a low place plainly discernible after the finishing coats are in place. At any rate, there are far too many crack fillers of these types, and no doubt some have wondered whether there are any other kinds. Let us be glad that we can answer in the affirmative, for it is a fact that crack fillers are obtainable that are absolutely unshrinkable. —S.B.P.




## Summer Style Colors

THE FIRST of the color cards of new colors for the summer season has recently been issued by the Textile Color Card Association of the United States. There is a high fashion tendency toward faded or overcast shades which is shown in several important colors of the new group. Dust Blue, a muted tone of medium value, reflects the growing interest in greyed blues. Aztec Rust, a soft Indian pottery tone with a hint of rose, is a new variation of the popular Mexican theme. Mexigold, a deep old gold, is a smart expression of the same Mexican popularity. Completing the group of "off" shades is Honey Peach, a mellowed fruit tone.

Among the paler tints, Cream Pearl represents a new version of "off-white." Anisette, a refreshing pastel green, is the shade of the French liquer by that name. Tuscan Blue is a smart rendition of a "linen" blue tone. Another cool summery hue is Dawn Rose, a clear pink with depth. There is a marked interest in aquamarine and lemon yellow, therefore Aquarelle and Lemon Tint are two pastel tones which have been repeated from the spring card.—B. CALDWELL.

### *Stacks Barrels Safely*

A new stacker and elevator for quickly and safely handling barrels and drums under practically all conditions, has been designed by the Lewis-Shepard Co., Watertown Station, Boston, Mass. Ask for circular No. 181.

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Sand Carving Wood the new process
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**OP-AL Electric & Mfg. Co.,**
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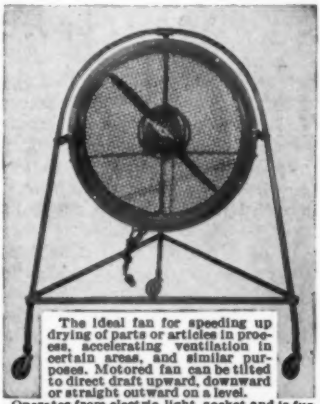

The ideal fan for speeding up drying of parts or articles in process, accelerating ventilation in certain areas, and similar purposes. Motored fan can be tilted to direct draft upward, downward or straight outward on a level.

Operates from electric light socket and is furnished with vapor-proof or enclosed type motor, as desired. Propeller blade is nickel alloy aluminum. Height 46-in., weight 70 lbs., floor space 38-in. triangular. Price very reasonable.

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**Pulmosan Safety Equip. Corp.**
**176 Johnson St. Brooklyn, N. Y.**

# Dip and Squeegee Finish for Long Handles

## by J. E. Greene

THE MOST practical and improved method for finishing long dowels and broom handles, other than by using a time dipping machine, is to use the squeegee or gasket dip, wherein each handle is dipped singly by hand.

In applying the stain I suggest using a penetrating stain; this can be applied by dipping. Several handles could be submerged in the stain for a short period of time, until a thorough penetration of the stain takes place. They could be stacked up or spread out on frames to dry, and then polished in a lathe with shellac, which is called friction polishing.

If a better finish is desired, one or more coats of clear lacquer should be applied by the squeegee method, the final coat being polished if desirable. This operation is done with No.00 steelwool and wax polish, the work being performed in a speed lathe.

### Color Enamel Finish

For an enamel finish, a clear filler can be applied by the squeegee method, using either a quick-drying varnish filler or a lacquer sealer, heavy in solids. After the surfaces are thoroughly dry, a quick-drying colored enamel or a lacquer enamel can be applied by the same method. Most concerns are using lacquers in preference to oil enamels because they are quicker drying and give a much tougher and more elastic finish, and do not chip so easily. On the better grade handles, one coat of filler, one coat of colored lacquer enamel, and a final finish coat of clear gloss lacquer are used.

I doubt if a filler could be tumbled satisfactorily on dowels or broom handles. I imagine they would tangle themselves up in the barrel, and the result would be somewhat of a mess. I would stick to the dip process by the squeegee method. The squeegee-scraped film is left smooth and even for the entire length of the handle, with practically no loss of material through evaporation or through excess material being left on the handle.

### The Dip-Squeegee Tank

Several different types of squeegee tanks are now in service, but one of the most practical and easiest to construct is shown in the accompanying sketch. Extending down from this box-like tank is a large pipe or tube 3 or 4-in. in diameter and 2 or 3-in. longer than the longest handle to be dipped. This pipe is closed at the bottom.

Suggested dimensions for the rectangular box are 5-in. high,

# Shellac

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# The TAYLOR SYSTEM of COLOR HARMONY

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. . . and the Taylor System of Color Harmony solves the problem of selecting color combinations easily, quickly and always harmoniously. This system is based on fundamental, natural color laws, but is reduced to such simple chart form, that anyone can readily understand and use it—there are no books to read—it's right before you in color.
No waiting. No guessing. You simply select the base color for your scheme and the Taylor Keyboard automatically shows all the colors that harmonize with your base color. *Discards of color cannot appear through the mask.*

Chart "A" of the Taylor color Harmony Keyboard is 22 x 15 inches and shows 96 different colors. It is accompanied by two black cardboard masks which can be adjusted to show four different tones of each color. Price $5.00.

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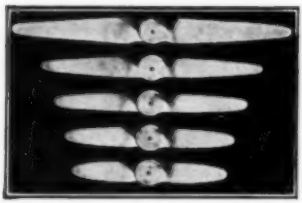

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| 30 inch..... | $8.00 | 24 inch..... | $6.00 |
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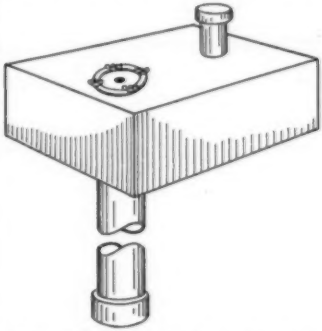
324 W. 10th St. Indianapolis, Ind.

10-in. wide and 12-in. long. It has two openings at the top—one for the rubber squeegee washer and the other fitted with a capped neck that can be opened for pouring in finishing material, and closed to prevent evaporation. The rubber gasket or squeegee washer is held in place by reinforcement rings



This small rectangular tank has a long tube or pipe extending down from the bottom, in line with the dip-squeegee opening at the top. Handles are pushed down through the squeegee opening and then withdrawn and hung up to dry.

clamped together with bolts and thumbnuts.

The rubber gasket used should have a perfectly round hole about half the diameter of the handles to be dipped. Gaskets can be of various degrees of hardness. The more flexible ones (like an automobile inner tube, for example), leave a heavier coating. The thickness of finishing coat left on the handles may also be regulated to an extent by the type of material used. One gasket will usually permit the dipping of from 300 to 400 handles before getting out of shape or unfit for use.

### How It's Done

The operation is simple, and production per man is high. Fill

the dipping tank to a level that is only ½ or ¾-in. below the rubber gasket. The operator forces each handle through the hole in the gasket to its full length. This entrance of the handle displaces some of the finishing material in the long tube and forces the overflow into the reserve tank at the other end of the box. Each handle should be withdrawn with a uniform rapid motion, being held vertically so the coating on all sides will be uniform. The rubber gasket strips off the excess material into the dip tank. The number of coats necessary will depend on the finish desired.

---

## Lacquer Over Rivet Heads; Trouble; Remedy

A NOTATION I made in my book for future reference is as follows:

"Be extremely careful when using lacquer over rivet heads so that the plates, where they fit, are completely sealed with a proved oil primer. Sand-blasting and cleaning will not always answer, as through varying degrees of heat in the drying room, capillary action sets in; and oil, even if it is such an infinitesimal quantity that there is no suspicion of its presence, it may seep through and cause bridging. This oil or grease is caused by the drill or punch when perforating the plate, and is not recognized as it should be."

In this particular case, I sold a pressed-steel car manufacturer the equipment necessary to spray passenger cars on an order from a large railroad company. After spending several days at the car plant, instructing and cooperating in the use of finishing equipment, with everything going fine, I was

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Houston, 1027 E. 11th St.

called back by wire from the eastern part of the state on account of the job running into trouble. The railroad inspectors were rejecting the first lot of five finished cars.

The finish manufacturer's industrial factory man was on the job and blamed the equipment irrespective of the fact that the large sheets showed a velvet finish, free even from orange peel, while at practically every rivet head the lacquer showed "bridging," if it had not already fallen off due to switching of cars.

I felt I knew the answer on this—the railroad inspectors should have, and were possibly so informed, as I had seen the same condition at the shops some years earlier—but the blame was placed on the equipment instead of "primers" by the finish manufacturer's representative, who claimed his organization knew their business, etc.

On my confidential suggestion to the Works Manager that they buy an independent company's oil primer with which I was familiar (even though I stress the point that the material user confine his purchases for primer and finishing lacquers from one source) and spray alternate plates without the knowledge of the finish manufacturer's representative, whose product was to be similarly used, as possible proof of what I thought might be the source of trouble, they did so and had no further trouble.

I have written in this way, not to convey the thought that I am more efficient than any one else, but instead to indicate that the notation entered in my book is based on an actual occurrence.

Also, I have the thought that while the old-timer will not waste much time in reading what to him is a primary lesson, a revival of industry will bring in equipment operators and finishers who will be glad of an opportunity to start in with a series of articles in a graded form, which will enable them to recognize what is causing their troubles and enable them to correct such troubles by simple means. And at the same time, old operators will readily recognize whether suggested items are correct and of value, and if not so, they will shortly begin to file objections.—W. Q. Howard.

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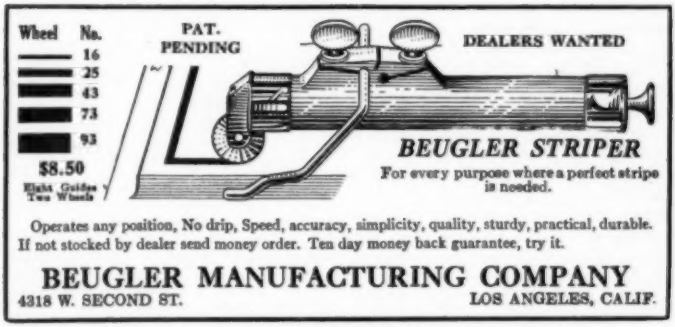
A flameproof finish, available in colors, will satisfactorily withstand heating red hot the metal on which it is applied.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# What's New « «

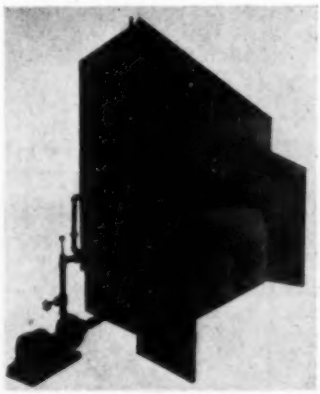
## Water (Spray) Booths

OPPOSED-DIRECTION water sprays, first directed with and then set against air flow to secure maximum efficiency of solids separation by sprays, is a feature of a new line of water booths announced by the DeVilbiss Co., Toledo, Ohio. These booths are designed to prevent the discharge of heavy solid sticky paint residue to the outsides of buildings.

Eliminator plates, equivalent to six 10° angles, remove free water from discharged air at low velocity. Water-tight doors provide easy and convenient access to all sprays, strainer, overflow, valves and eliminator chamber. Units are sturdily built in every part and can be adapted to any type of spray booth.

These water booths may be operated in neighborhoods where the use of standard fan or blower-type booths would be prohibited. They are invaluable where the booth exhausts close to other buildings. Where vitreous materials are sprayed, this type of booth permits the control of objectionable dust and the reclamation of solids.

Installation of these booths is simple. Exhaust piping is easily located to suit particular conditions. Height of stacks is reduced to a minimum and in some cases entirely eliminated. Maximum exhausting efficiency is assured by the elimination of accumulated paint on the fan or within the exhaust duct.



Water sprays and baffle plates prevent further discharge of solid residue from sprayed finishing materials.

## Metal Protective Coatings

APPLY this coating over rusty surfaces and it definitely checks further erosion, creating over the rusty surface a film which prevents disintegration. S.R.P. metal protective coatings have withstood the most severe conditions, such as exposure to sulphuric acid, hydrochloric acid, ammonium hydroxide, strong alkalies, hydrogen sulphide and salt water. Their effectiveness is explained by the impermeability of the film because of the absence of microscopic pores, and the dense continuous coating formed through the remarkable blending of the completely oxidized, inert and chemically stable natural element with special vehicles.

For further information, test panels and samples, write L. Sonneborn Sons, Inc. (paints, varnishes, enamels) 88 Lexington Ave., New York, N. Y.

## Mechanical Stripers

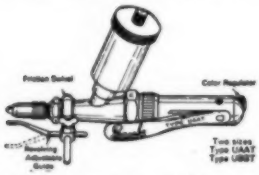
ONE OF THE two mechanical stripers illustrated in this article is controlled by the operator's thumb, and the other by the trigger and handle of a spray-gun type of tool. The thumb-action striper (types UAAT and UBBT) has an adjustable striping head to produce

stripes 1/64 to 7/64-in. wide, and a revolving adjustable guide. Type UAAT has a 1-oz. aluminum cup, and type UBBT has a 2-oz. aluminum cup.

Each of the pistol-grip stripers (types UAA and UBB, recommended where larger quantities of colors are used) has the adjustable striping head (1/64 to 7/64-in. stripe), a revolving adjustable guide, and a 1/2-pt. "Clamptight Cover" aluminum cup.

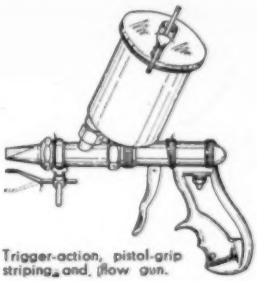
The swivel guide is adjustable to any position. The flow of the liquid can be perfectly controlled by adjusting the tapered fluid-regulating sleeve which regulates the stroke of the needle. The needle provides an instantaneous start or stop for the color.

Gravity cups may be replaced by "Clamptight Cover," pressure-feed cups where material is of such consistency that it will not flow. Raised



Thumb-action striping and flow gun.

or embossed effects may also be obtained by using a "Clamptight Cover" pressure-feed cup, or "Clamptight Cover" pressure-feed tank and hose. When using pressure-feed cup or tank units, a small supply of compressed


Trigger-action, pistol-grip striping and flow gun.

air is required. Special flow tips to fit various widths and shapes of grooves, as well as multiple stripe tips, are made to order.

Any color used in these stripers should be mixed into a free-flowing consistency. Too heavy a consistency causes the color to flow too slowly, causing skipping; too thin a color will blur or run. At the proper consistency, the color should flow and drip from the tip of the flow gun at the rate of approximately one drop per second, when held in perpendicular position with trigger full open. Reduce flow of color to a speed suitable for work to be done by turning color-regulator feed-control sleeve while trigger is held open.

## "Machine Gun" Fire Extinguisher

AIM IT like a gun, pointing it at base of fire, lift pump, and it supplies a steady stream of Wil-X

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The pump and nozzle fold down alongside the extinguisher when not in use. In action the pump is raised

Two views of the gun type of fire extinguisher.

quickly, which instantaneously opens the positive sealing valves. The valves close automatically when the pump is lowered, shutting off the stream, saving the remaining liquid.

This new type of fire extinguisher, invented by P. L. Wilbur, creator of the Pyrene model, is manufactured by the Wil-X Mfg. Inc., 29 Ryerson St., Brooklyn, N.Y.

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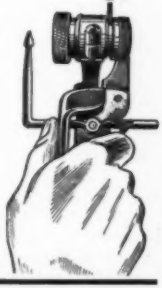

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# EDITORIAL

## Wide Stripes

How to put on clean-cut durable color stripes as wide as ¾-in., quickly and neatly, has several manufacturers puzzled. Leaving hand striping and masking out of the picture as being too slow and costly, there remains: 1) a spray gun type of striper which has side discs to prevent any "fuzzing out" or "over spray" at the edges, and 2) applying a decalcomania stripe by the transfer process. In production jobs "decals" are often used for applying letters, numbers, monograms, emblems and ornaments.

## Buffing Mouldings; Carvings

Interest in this subject is always in evidence, but too many people expect the impossible. Buffing is merely a light final touch to accomplish smoothing and polishing, as in buffing ladies' finger nails. It's not an operation to successfully make shoddy material and slighted workmanship look like "a million dollars." Before buffing begins, be sure you have smooth clean-cut surfaces with smooth finish coatings applied. Buffing does not afford a satisfactory means for removing burs, or for smoothing up careless machine and assembly work or a pimply finish.

## Non-Bleeding Red Stain

Seeing a typical inquiry on the above subject recently in INDUSTRIAL FINISHING, a finish manufacturer sent to this office a panel faced with three differently finished sections—mahogany red, ebony black, walnut brown—over which a ½-in. white enameled stripe had been applied. The white is completely opaque and shows no trace of the stain bleeding through the red, black or brown. Several firms furnish non-bleeding stains, but this demonstration panel is impressive. It presents graphically a fact which interests practically every finisher or refinisher of wood surfaces.

## Steel Mouldings

Formed steel mouldings in intricate shapes and cross sections are now being offered for new and replacement work where formerly wood or cast metal was employed. Widely used in the automotive industry where so many

new things originate, these mouldings are now invading other fields. Materials for cleaning, finishing and decorating them will be the same as for other metal surfaces, but special methods and equipment will probably be developed where large production of long-length finished mouldings is involved. Also, some changes in finishing will occur in the picture-frame industry.

## "Cement Felt to Aluminum"

While you might consider this subject removed from INDUSTRIAL FINISHING's field, several answers to the aviation company's inquiry, which appeared among the "Letters" on page 7 of April issue, indicate that it is interesting to both manufacturers and users of finishing materials. In addition to several cements offered to do the job (including receipt of a sample strip of felt glued to aluminum), one company suggests producing the same effect by the application of binder and flock. In other words, prepare the aluminum surface and spray on flock to give the desired felt or suede covering—which is a 100% finishing job.

## Perpetual Motion? No! Non-Touch Support? Yes!

What the finishing world is waiting for is not perpetual motion but a means of effectively supporting small articles while they're being finished and while they're drying, without having to contend with their touching each other, or some tangible support. Manufacturers of bolts, nuts, small items of hardware, Venetian blinds and numerous other products of various shapes, sizes and weights are confronted with difficulties resulting from having these objects come in contact with one another or with screens, pins, hooks, bars, wires, conveyors, etc., while the finish coatings are being applied and while same are drying. Some very ingenious and expensive equipment is being employed in an effort to handle such products rapidly and satisfactorily with a minimum amount of trouble while the finishing and drying processes are under way.

## Bleaches Dark Woods to Bone Whiteness

Two articles in April issue (pages 22 and 42) prompted a manufacturer to send the Editor two samples of plywood, one faced with mahogany and the other with walnut. Half of each face wood was natural and half was bleached to practically the whiteness of bone or ivory, and then finished with clear shellac and wax. The firm suggests its patented bleaching material as a first step (and the logical step) for producing the bone white and

ivory white finishes asked for by "X.L.Table Co." (page 50 April). This bleaching material removes color but does not conceal the beautiful figure and grain of the wood.

## Rust-Proofing Bulletin

The Parker Rust-Proof Co., 2177 E. Milwaukee Ave., Detroit, Mich., has prepared an interesting 4-page folder (8½x11-in.) in three colors, which reveals some specific information about the causes and results of corrosion as it affects painted or finished surfaces, and how to treat iron to permanently prevent such corrosion. Copies of the bulletin will be sent to interested executives.

## "The Bull's Eye" Booklet

Snappy articles and striking illustrations about shellac, including a dialogue under the title "Do You Carry—or Do You Sell Shellac?," appear in April 1934 issue of William Zinsser & Co.'s 20-page booklet "The Bull's Eye," Vol. XI, No.2. Address William Zinsser & Co., New York, N.Y.

## Saw Blades Protected With Aluminum Paint

As a rust preventative finish for saw blades, aluminum paint has been found unusually effective, according to the Henry G. Thompson & Son Co. of New Haven, Conn. The paint is applied by means of a spray gun, over the entire surface of their Milford Rezistor and high-speed steel hacksaw blades.

## Duco Cement

The Finishes Division of E. I. du Pont de Nemours & Co., Wilmington, Del., has just placed on the market a new 10c tube of its well known Duco household cement. This is the first time this product has been made available in such a popular sized container. Among other advantages is the fact that the smaller tube makes it convenient to be carried in a kit for the home, the car or boat.

CUT STRIPING COSTS WITH
MOORE FOUNTAIN STRIPERS
THE GENERAL INDUSTRIES CO.
Moore Fountain Striper Division
1 Taylor St. Elyria, Ohio
Representatives-Ferro Enamel Corporation
Cleveland

## Home-Service Enamel

The merits of U.S. Deck rapid-drying enamel for floors and porches are presented in a folder released by The Billings-Chapin Co., 1163 E. 40th St., Cleveland, Ohio.

## Bottle-Filling Machine

Eleven modern and improved characteristics are listed as features of a new automatic bottle-filling machine recently placed on the market by Alsop Engineering Corp., 39 W. 60th St., New York, N.Y.—a concern whose line also includes mixers and filters for use by manufacturers and users of finishing materials.

## Reynolds Co's New Plant For Aluminum Bronze Powder

Reynolds Metals Co. (541 W. 25th St., N. Y. C.) has erected a new plant in Louisville, Ky., designed solely for the production of aluminum bronze powder for the paint industry.

"Increased demand for this powder," says Richard S. Reynolds, President, "made this expansion necessary. With the new plant in Louisville, which includes the most modern equipment, our aluminum bronze powder production is now stepped up by 100%."

## Letters from I. F. Readers

*(Continued from page 7)*

lacquer. I am interested in this type of lacquer and am considering importing it from America for resale to glass works for decorating purposes. Could you inform me for what other purposes this lacquer can be used and what kind of industries are making use of this lacquer in your country?

Further I am interested in a special glazier's putty for steel windows. The ordinary linseed oil putty, as used for wooden windows, does not give full satisfaction for steel windows. Could you tell me whether there exists in America a special

putty for steel windows, either ready for use or to be mixed, and could you bring me in touch with a number of manufacturers of such putty for steel windows?—Q.J., The Hague, HOLLAND.

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**Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.**

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